Columbia/Snake Rivers Temperature TMDL
Preliminary Draft November 13, 2002
Figures

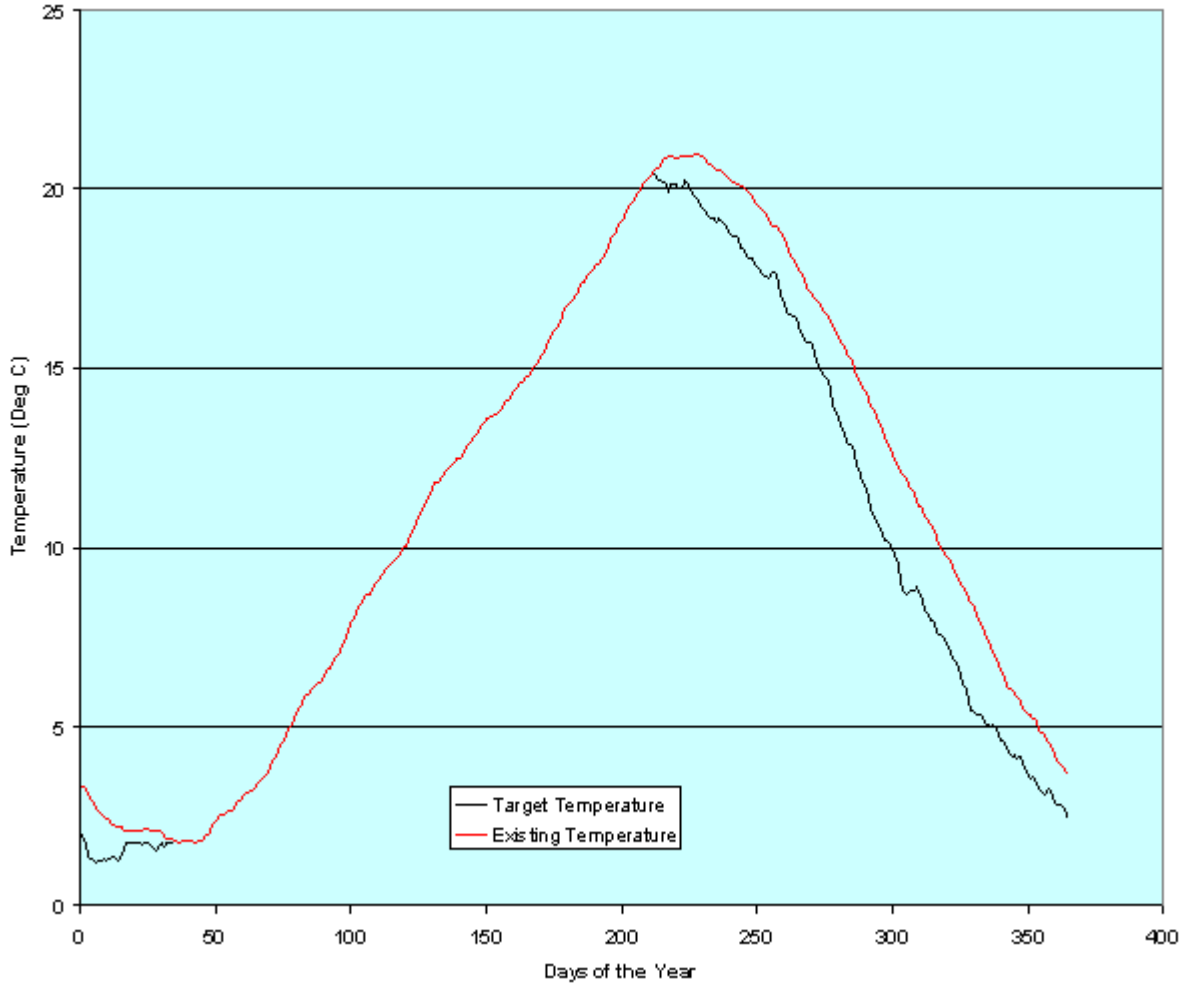

Figure S-1: Existing and TMDL target temperatures at John Day Dam

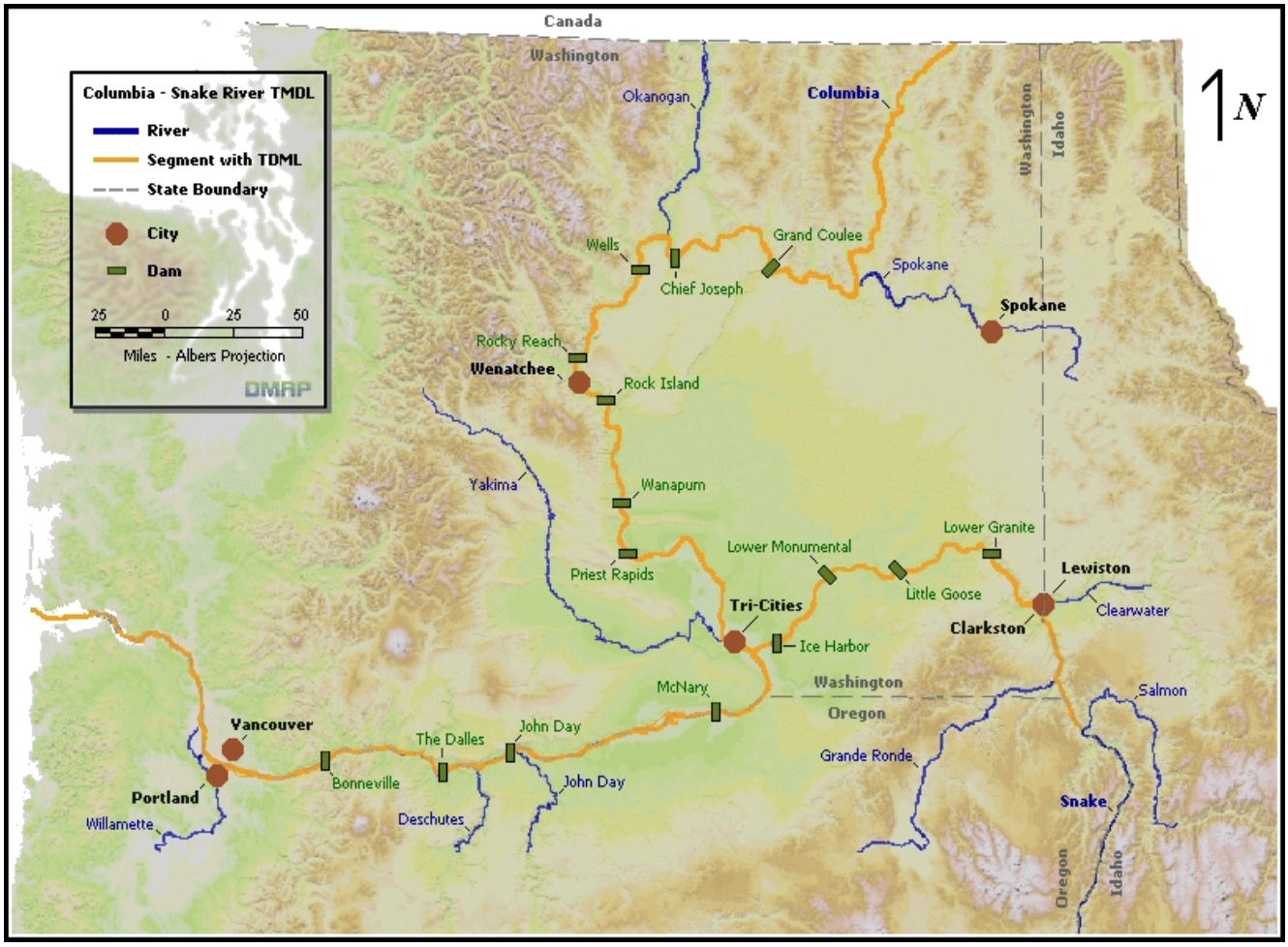

Figure1-1: The reaches of the Columbia and Snakes rivers covered by this TMDL

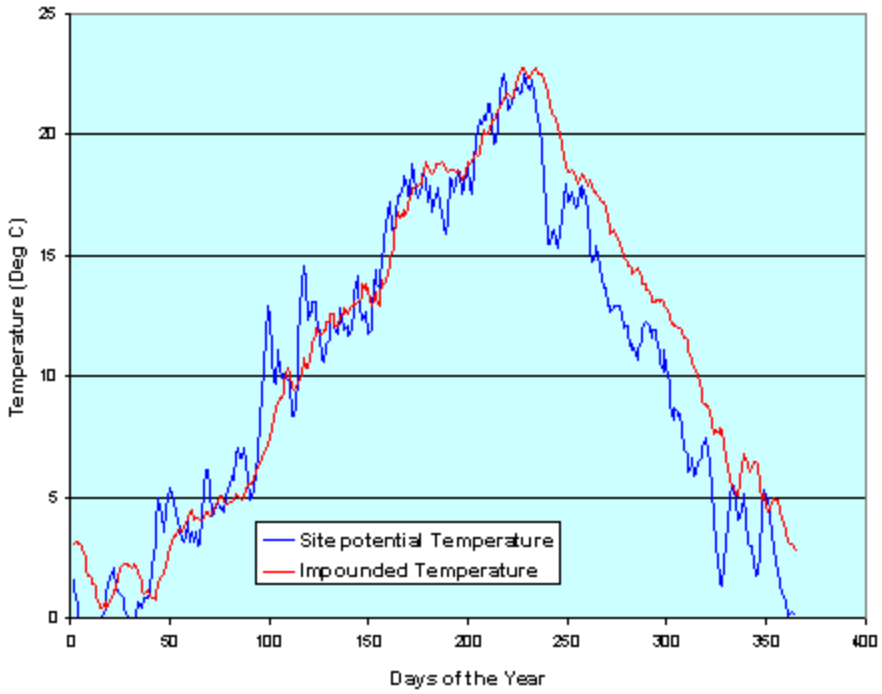

Figure 3-1: Simulated site potential and impounded temperatures at John Day Dam in 1977

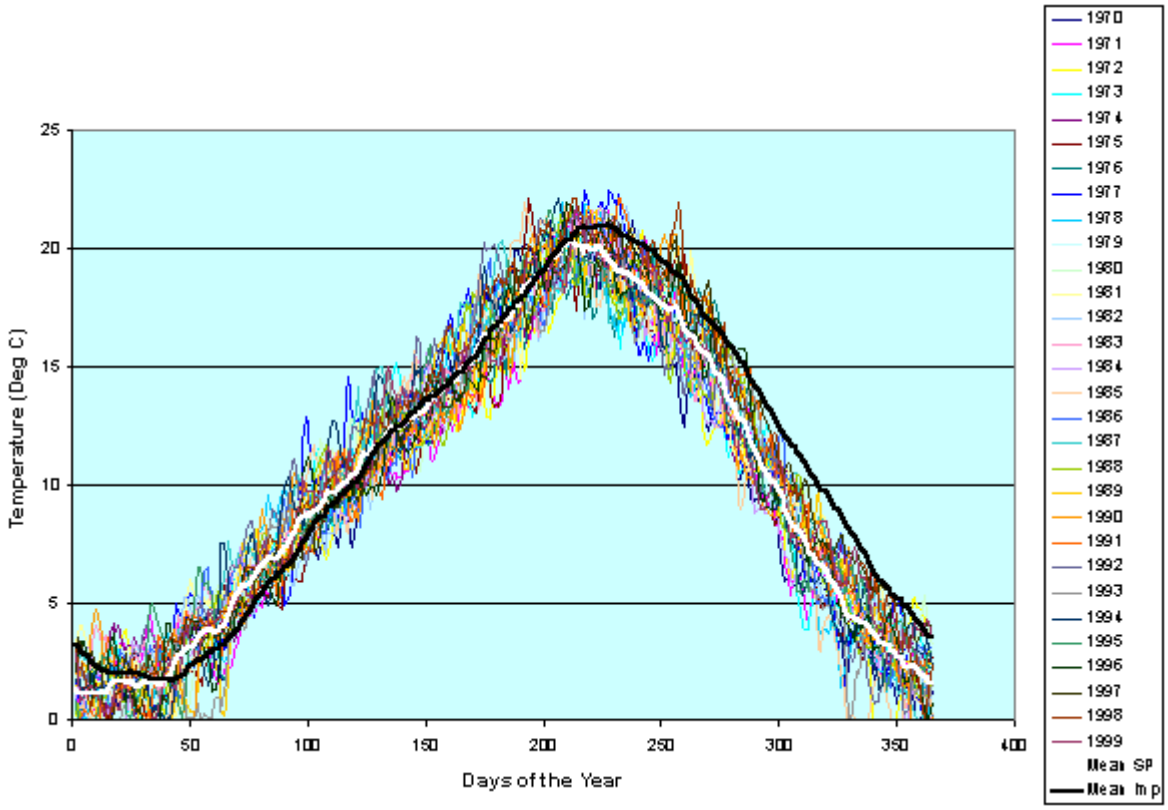

Figure 3-2: Simulated site potential temperatures at John Day Dam from 1970 through 1999.

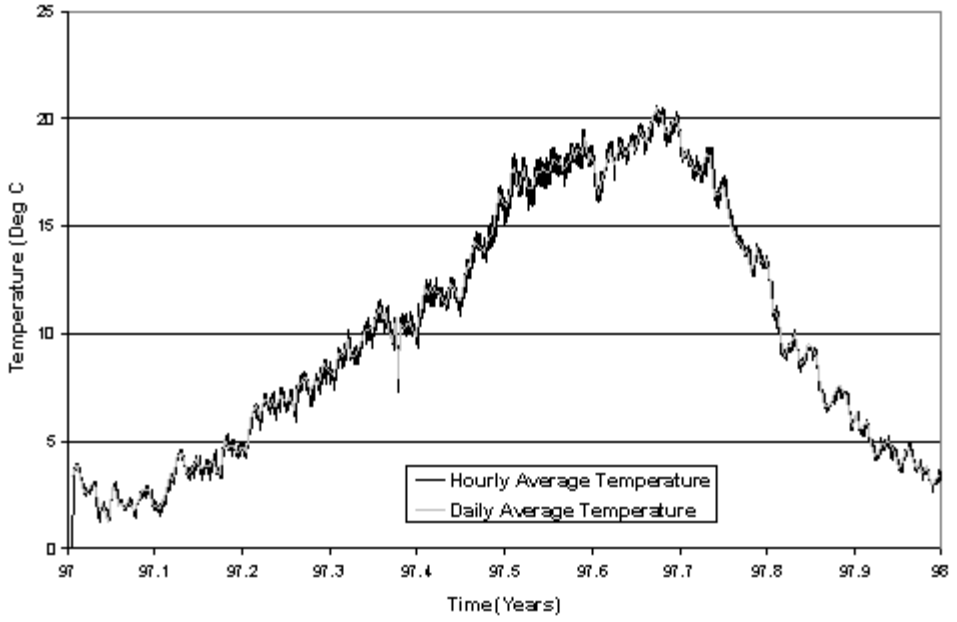

Figure 3-3: Simulations of daily average temperature and hourly average temperature in the free flowing river at Lower Granite Dam in 1997.

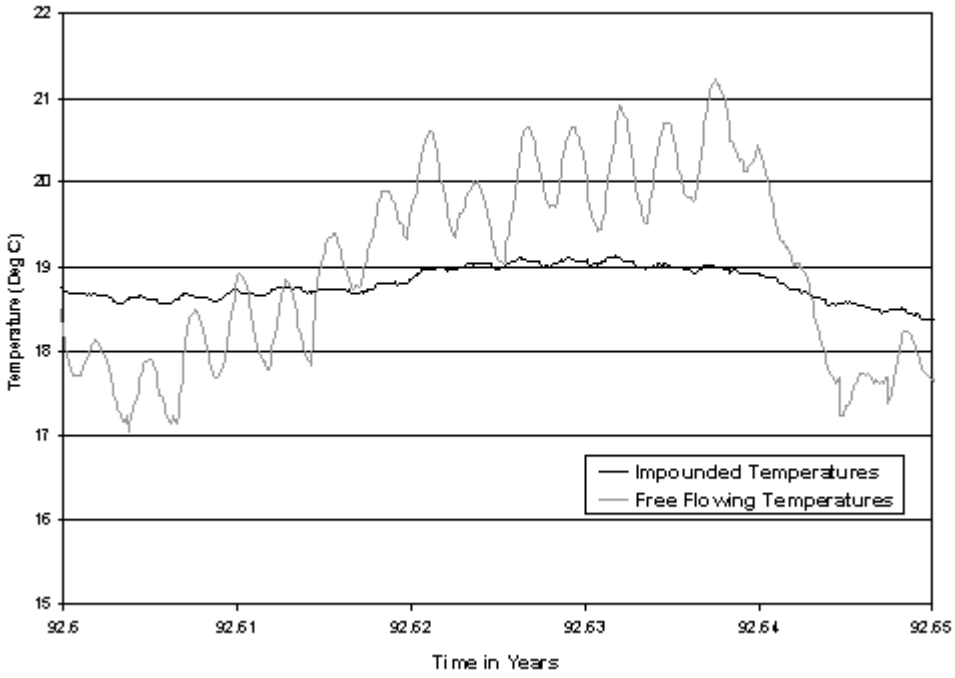

Figure 3-4: Simulated hourly average temperature in the impounded and free flowing rivers at Grand Coulee Dam from August 7, 1992 to August 25, 1992.

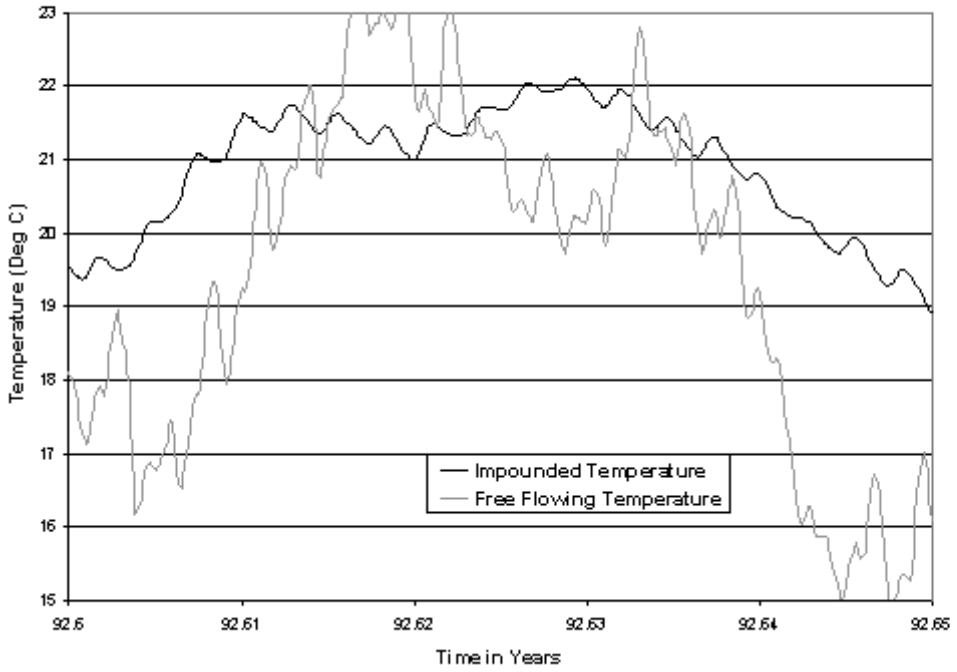

Figure 3-5: Simulated hourly average temperature in the impounded and free flowing rivers at Lower Granite Dam from August 7, 1992 to August 25, 1992.

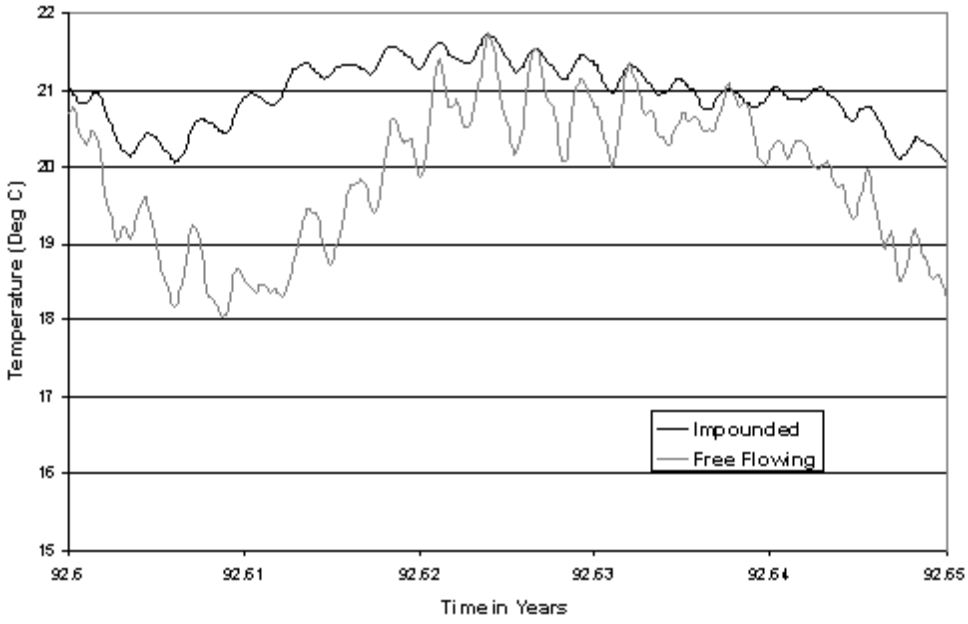

Figure 3-6: Simulated hourly average temperature in the impounded and free flowing rivers at Bonneville Dam from August 7, 1992 to August 25, 1992.

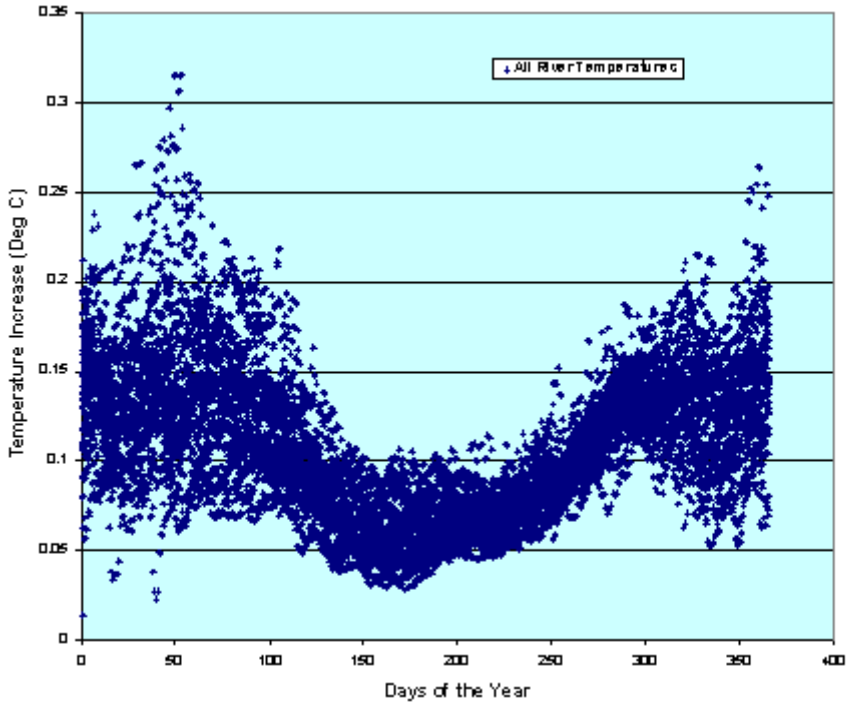

Figure 4-1: Simulated increases in temperature at river mile 42 in the Columbia River due to existing point sources plus 20 MW at each target site from 1970 through 1999.

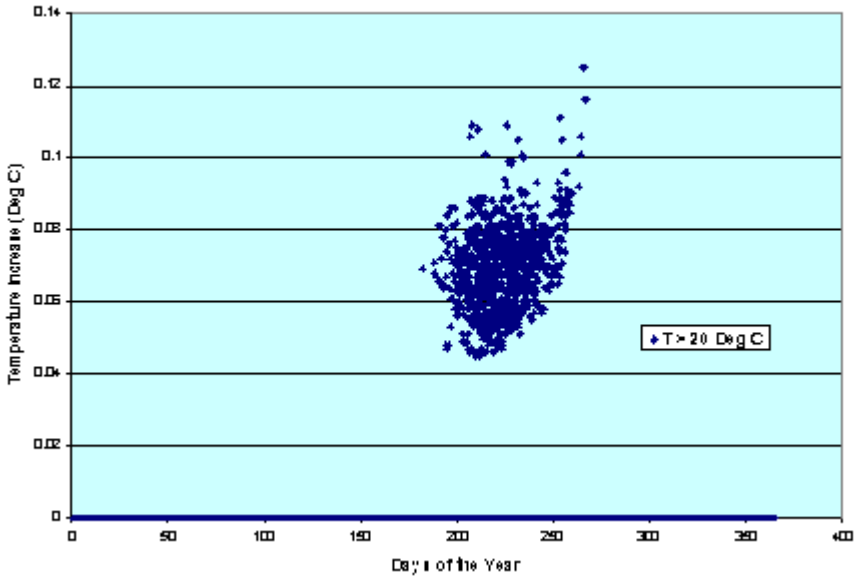

Figure 4-2: Simulated increases in temperature at river mile 42 in the Columbia River due to existing point sources plus 20 MW at each target site when site potential temperature exceeded 20 °C from 1970 through 1999.

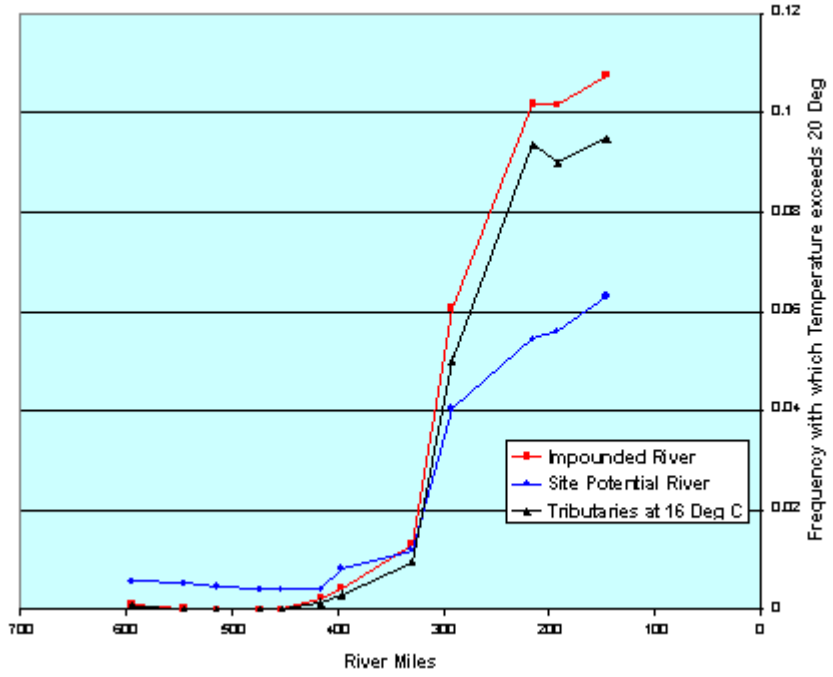

Figure 4-3: Frequency of predicted temperature excursions over 20 °C in the Columbia River for the existing impounded river, the site potential river and the impounded river with tributary temperatures constrained to 16 °C.

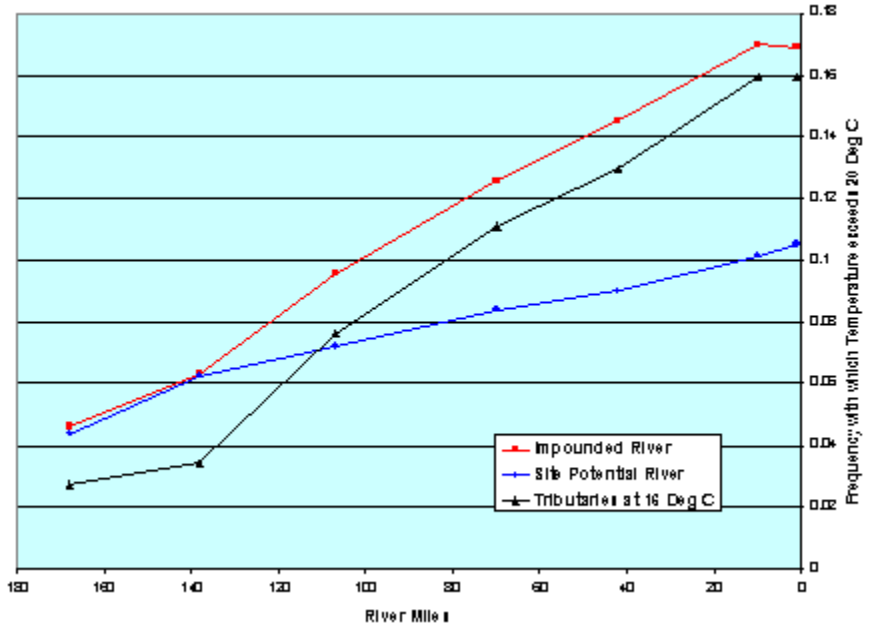

Figure 4-4: Frequency of predicted temperature excursions over 20 °C in the Snake River for the existing impounded river, the site potential river and the impounded river with tributary temperatures constrained to 16 °C.

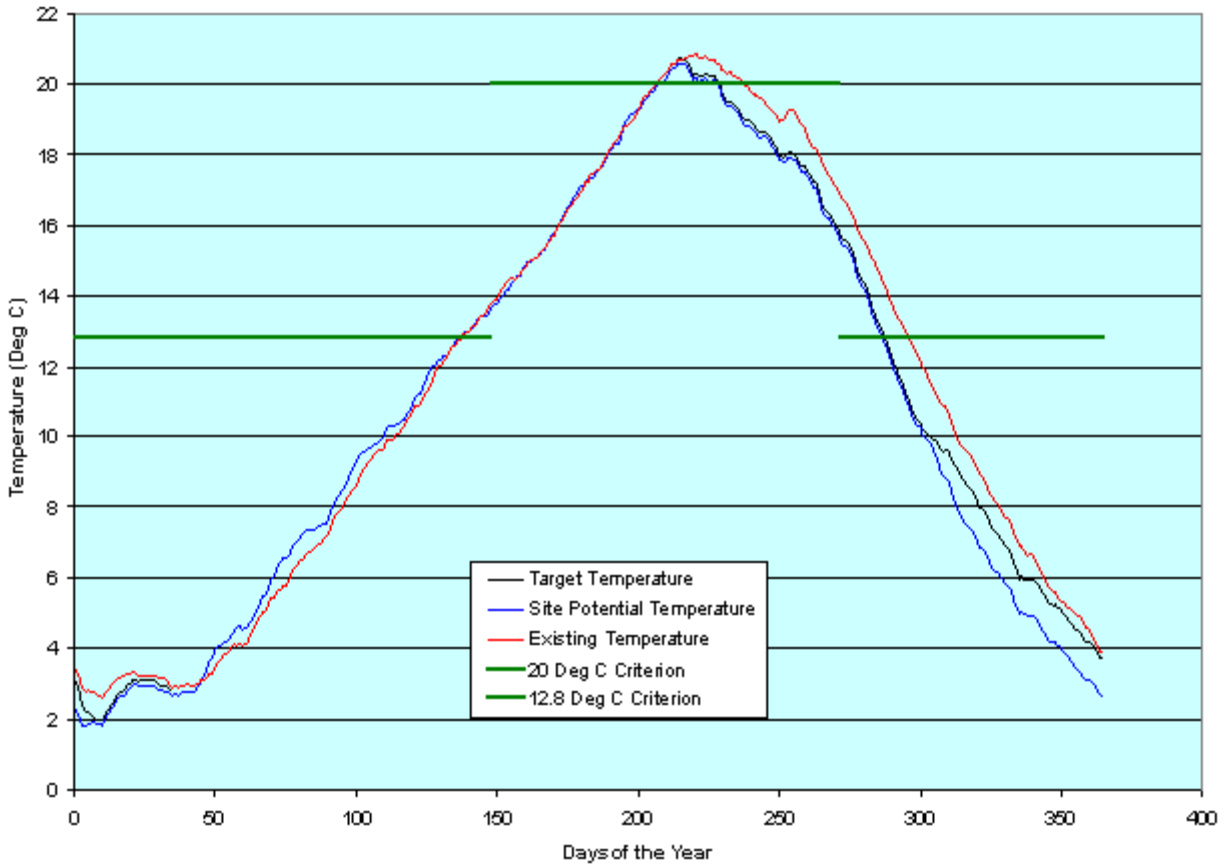

Figure 5-1: Target, site potential and existing temperatures at Columbia River mile 42 illustrating the seasonal variation. The seasonal water quality criteria are shown in green.

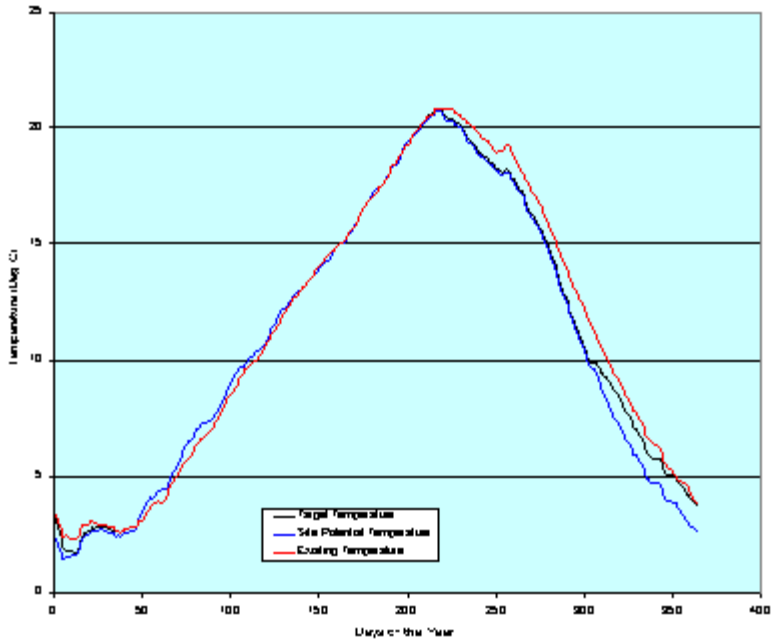

Figure 5-2: Water temperature at Columbia River mile 4 showing existing temperature, site potential temperature and the loading capacity temperature.

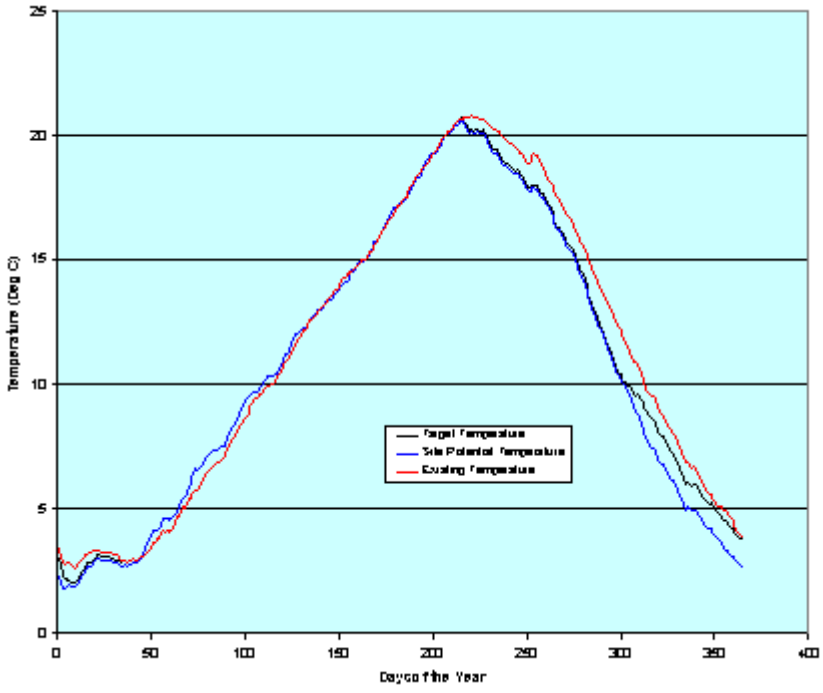

Figure 5-3: Water temperature at Columbia River mile 42 showing existing conditions, conditions with point source thermal loads removed and conditions under the proposed TMDL.